

REMARKS

In response to the Office Action, Applicant respectfully requests the Examiner to reconsider the above-captioned application in view of the foregoing amendments and the following comments.

Discussion of Claim Rejections Under 35 U.S.C. § 103(a)

In the Office Action, the Examiner rejected Claims 1-4, 6-8, 11, 12, 16, 19-22, 24-26, 28-31, 33, 36, and 39-58 as being unpatentable over U.S. Patent No. 5,777,680, to Kim in view of U.S. Patent No. 5,812,197, to Chan. Claims 13-15, 17, 18, 32, and 34 were rejected as being unpatentable over Kim in view of Chan and further in view of Sun. Claim 9 was rejected as being unpatentable over Kim in view of Chan and further in view of Krause.

Applicant respectfully disagrees with these rejections. Applicant respectfully submits that the cited art fails to teach or suggest at least one limitation from each of the above-listed claims. One embodiment of Applicant's invention generally includes an encoder that has at least two encoding steps. The second decoding step is *adapted* based upon a *predicted* energy content of the output of the first encoding part. For example, turning to claims, it is seen Claim 1 recites in part: "performing a second sub-encoding on the first sub-encoded block, the *second sub-encoding adapting* at least one encoding parameter *based upon* characteristic indicative of an *energy content of the first sub-encoded part of the current frame*, the characteristic being determined by prediction, without using either the first sub-encoded block or set of blocks of the current frame, and at least in part from of the frames of the sequence only those frames that are a reference frame." Similar types of limitations are recited in the other independent claims.

In contrast, Kim is generally directed video encoding system. In the Office Action, the Examiner acknowledged that "Kim fails to disclose the second sub encoding having a characteristic indicative of an energy content as is claimed." However, the Examiner took the position that this feature is described by Chan. Applicant respectfully disagrees. Applicant notes that the second encoding, such as is recited in independent Claim 1, is adapted "at least one encoding parameter based upon characteristic indicative of an energy content of the first sub-encoded part of the current frame, the characteristic being determined by prediction, without using either the first sub-encoded block or set of blocks of the current frame." In contrast, Chan describes a decision processor that adapts an encoding process while using data of the current frame. In particular, the decision processor of Chan creates a decision criteria, "Correlation

Factor (CF)", that is used to select a macroblock during the encoding process. However, the value of CV is used from original pixel data of the current frame undergoing encoding. *See e.g.*, col. 6, lines 1-14.

Since Kim and Chan in isolation and in combination wholly fail to disclose "adapting a second encoding parameter based upon characteristic indicative of an energy content of the first sub-encoded part of the current frame, the characteristic being determined by prediction, without using either the first sub-encoded block or set of blocks of the current frame, and at least in part from of the frames of the sequence only those frames that are a reference frame," Applicant respectfully submits that Claim 1 is in condition for immediate allowance.

Applicant notes that independent Claims 7, 11, 12, 13, 15-20, 25, 28-30, 32-36, are allowable for reciting similar types of limitations. Applicant notes that with respect to independent Claims 13, 17, 18, 32, 34, and 35, the Sun reference was relied by the Examiner as teaching other limitations, e.g., skipping encoding. Sun fails to teach or suggest the adaptation step discussed above. Furthermore, Applicant respectfully submits that the dependent claims are allowable for the reasons discussed above and the subject matter of their own limitations.

For example, with respect to dependent Claim 3, it recites "wherein computing of the characteristic identifies the time elapsed between the current frame and the reference frame or frames." Applicant notes that the recited characteristic is "indicative of an energy content of the first sub-encoded part of the current frame." *See* Claim 1; also, e.g., see Claim 8 and others. In the Office Action, the Examiner stated that this feature was disclosed on col. 6, lines 43-45 of Kim. In response, Applicant notes that the cited section does not relate to elapsed time, as is claimed. Furthermore, Applicant submits that the cited references fails to teach or suggest a second encoding process using this information.

With respect to dependent Claim 4, it recites: "wherein the encoded frames are transmitted over a transmission channel and wherein the adaptive encoding method compensates for channel bandwidth limitations and adapts the second sub-encoding parameters based at least in part upon the characteristic." In the Office Action, the Examiner stated that the feature was disclosed by Kim, which teaches the use of a buffer full flag representing the state of a buffer 600 when encoding data. Applicant respectfully submits that the buffer 600 does not correspond with the recited channel bandwidth limitation. The recited channel bandwidth relates to the

communication pathway between an encoder and a decoder—it is not a component of the encoder itself.

Moreover, dependent Claim 6 recites: wherein the second sub-encoding is selected from the group comprising: “wavelet encoding, quadtree or binary tree coding, DCT coding and matching pursuits coding.” In the Office Action, the Examiner stated that this feature was disclosed by Kim which teaches DCT coding. However, Applicant respectfully submits that there is no teaching or suggestion in either Kim or Chan to modify a DCT coding process using a predicted value estimating energy of the current frame and that is derived from information not from the current frame. In Chan, the “prediction” as suggested by the Examiner is used to drive the selection of macroblocks of the current frame and it is not part of the DCT process. *See* Chan, Figure 6, DCT 70 is distinct from operations occurring in decision processor 32.

In addition, Claim 9 recites: “wherein the identifying selected blocks depends upon motion vectors determined for the blocks.” Applicant notes that in the context of Claim 9, the identifying is performed with respect to computing a predicted energy content of the current frame using only blocks from a reference frame. *See* independent Claim 7. In the Office Action, the Examiner stated that the concept of comparing motion vectors is generally known, e.g., the Krause reference. In response, Applicant agrees. However, Claim 9 recites a particular novel and patentable usage of motion vectors to compute a characteristic indicative of an energy content of a current frame to be encoded and in that process uses “frames of the sequence only those frames that are a reference frame.” Applicant respectfully submits that there is no teaching or suggestion of this novel use of motion vectors in any of the cited references.

Summary

Applicant has endeavored to address all of the Examiner’s concerns as expressed in the outstanding Office Action. In light of the above amendments and remarks, reconsideration and


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withdrawal of the outstanding rejections is respectfully requested. If the Examiner has any questions which may be answered by telephone, he is invited to call the undersigned directly.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

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By: 

Eric M. Nelson
Registration No. 43,829
Attorney of Record
Customer No. 20995
(619) 235-8550

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